Masculinity, Injury and Death – Implications for Anti-knife-carrying Messages

Abstract

Although knives are the most common homicide instrument in Britain, factors that influence knife-carrying tolerance (i.e., the extent to which it is seen as acceptable and justified) and perceptions of anti-knife messages (i.e., slogans and posters aimed at reducing knife crime) have not been examined, which the current paper will cover by featuring progressively related studies. In *Study 1*, 227 men took part in a study on factors associated with knife-carrying. In *Study 2*, 200 participants took part in an experimental study on anti-knife slogans. In *Study 3,* 169 men took part in a study on existing anti-knife injury posters. In *Study 4,* 151 men took part in a study on anti-knife CGI posters. *Study 1* proposes a structural equation model that shows the inter-correlations between *physical defence ability, limited trust in authority, limited control over one's status* and *the need for respect*, and how they predict *aggressive masculinity* (i.e. macho culture), which, in turn, predicts *knife-carrying tolerance.* The model also reveals two significant latent factors: *saving face inter-male competition* (i.e., honor) and *perceived social ecological constraints* (*i.e., socio-economic limitations*). *Study 2* shows that the injury slogan was rated as most persuasive. *Study 3* shows that the fresh injury poster was rated as most persuasive, emotional and believable. *Study 4* shows that it was the eye injury that was rated as most persuasive, emotional and believable. The paper supports protection motivation theory and offers practical insights into tackling knife crime.

Keywords: community safety, knife-carrying, masculinity, messages, violence prevention

Masculinity, Injury and Death – Implications for Anti-knife-carrying Messages

In 2015, British police-recorded crime figures showed a 9% rise in knife crime Travis, (2016). Between March 2016 and March 2017, knife crime jumped by 20% to 34,703 recorded incidents – the steepest rise in seven years, with London accounting for 40% of the rise (Travis, 2017). Earlier in London alone, in 2008, 23 young men died after being stabbed, while in 2012, 2013 and 2014 there were six, seven and eight victims respectively (Proto, 2016). These figures become even more dramatic when injuries are considered, with 3,614 victims taken to British hospitals for injuries caused by bladed and sharp instruments between the year ending March 2014 and the year ending April 2015 (Office for National Statistics, 2016). The rise in knife crime is not a new phenomenon. Between 1997 and 2005, the number of people admitted to hospital reportedly following an assault involving a sharp object rose by 30% in England (Maxwell, Trotter, Verne, Brown, & Gunnell, 2007). Between 2014 and 2016, knife crime in London rose by 16% (Johnston, 2016). In 2015, in England and Wales, there was a nine per cent rise in the number of people caught carrying a knife and a 10% increase in knifepoint rapes and sexual assaults, reflecting 26,535 recorded offences (Bentham & Davenport, 2015). Given the recent steep reduction in 'random' stop and searches on British streets, which are a result of combined cuts to police budgets (Topping, 2015) and backlash of ethnic minority youths claiming unfair overtargetting (Sloan & Allison, 2015), knife crime in the UK is likely to be higher than official figures suggest.

Notwithstanding the scale of the issue, the empirical data on the reasons behind and subjective meanings associated with knife carrying are sparse, unsystematic, and largely unquantified (Palasinski & Riggs, 2012), which hampers the introduction of effective counter-measures (Ang, Huan, Chua, & Lim, 2011). What data exists suggests that knife-carrying stems mainly from a fear of crime, need for protection, and desire for social status

(Eades, Grimshaw, Silvestri, & Solomon, 2007; Lemos, 2004) or 'saving face' (Wilson & Daly, 1985; Daly & Wilson, 1988).

Protection motivation theory (Boss, Galletta, Lowry, Moody, & Polak, 2015; Floyd, Prentice-Dunn, & Rogers, 2000; Maddux & Rogers, 1983) offers one explanation for knife carrying motivation, in positing that motivations for self-protection are enhanced by four cognitions: risk severity, risk vulnerability, self-efficacy at performing the advocated risk-reducing behavior, and the response efficacy of the advocated behavior. The theory also suggests that the intentions/motivations are weakened by the perceived costs of the recommended risk-reducing behavior and the perceived benefits of the opposing risk-enhancing behavior. These processes are thus divided into: threat appraisal (i.e., severity, vulnerability, and benefits) and coping appraisal (i.e, self-efficacy, response efficacy, and costs). Although past studies have avoided the inclusion of all appraisal forms due to involved complexity, their subsets were examined in experiments on social marketing messages (Burgess & Wurtele, 1998; Castle, Skinner, & Hampson, 1999; Mahler et al., 1997).

The value of protection motivation theory has also been shown in research on anti-smoking advertising (Pechmann, Zhao, Goldberg, & Reibling, 2003), suggesting that messages themed in terms of social disapproval risks bolstered adolescents' intentions not to smoke. However, their perception of relative invulnerability to health risks compromised the health severity messages. It appears, then, that people are motivated to engage in desirable health behaviors in order to avoid social or interpersonal risk, rather than health risks. Hence, while 'strong' men might feel quite immune from the short-term health risks associated with smoking and drinking, health-themed messages might be more persuasive in conveying directly traumatic threats that young bodies are not immune to, like those posed by a knife. This suggestion is evidenced by a meta-analysis of a wide variety of promotion behaviors, such as condom usage, drink driving avoidance, tractor safety behaviors or sunscreen

application, which found that strong fear appeals and high-efficacy messages produced the greatest behavior change, whereas strong fear appeals with low-efficacy messages resulted in most defensive responses (Witte & Allen, 2000).

Supporting the need for the prevention of weapons use (Hemenway & Webster, 2015), the paper will combine the matching concepts from a related qualitative study on the meanings of teenage knife-carrying and protection motivation theory (Boss, et al., 2015; Floyd et al., 2000; Maddux & Rogers, 1983). Thus, it will be the first to explore the relations between them with a view to expanding theory on, and providing support for, existing and new anti-knife carrying messages. As in the UK men aged 10-25 are nearly twice as likely to have been the assault victim and a quarter of all murders are of males aged 17-32 (Younge, 2017), all participants in this research are young men. Following the main author's institutional ethics review approval, in *Study 1*, which draws on the concepts derived from a related qualitative paper on knife carrying (Palasinski & Riggs, 2012), the relations will be explored using a structural equation model. Drawing on the identified predictors, *Study 2* will then examine the perceived effectiveness of anti-knife slogans derived from *Study 1.* The following *Study 3* will then focus on existing anti-knife posters and identify the most persuasive type. Finally, combining slogans and images, *Study 4* will examine novel computer generated variations of the most persuasive poster type from *Study 3.*

Study 1

Qualitative research has found an association between adolescent knife carriers and aggressive masculinity, limited control over status, need for respect and physical self-defence, as well as deep distrust of government and police authorities (Palasinski & Riggs, 2012). *Study 1* tests a structural equation model exploring how 5-item Likert (7-point across all studies in this paper) scaled versions of these concepts[1] can predict knife-carrying

[1] Readers interested in these concepts are referred to the paper by Palasinski & Riggs (2012)

tolerance. An earlier pilot study found that asking participants directly about their own experience of knife-carrying led to withdrawal, evasive answers or denial. Thus, following the paper by Palasinski & Riggs (2012), the projective concept of *Knife Tolerance* was used to measure the extent to which knife-carrying could be seen as acceptable and justified.

More specifically, it was hypothesized that *Need for Physical Defence, Need for Respect, Limited Trust in Authorities* and *Limited Control over Status* would all be inter-correlated and predictive of *Aggressive Masculinity*, which in turn could lead to *Knife Tolerance*. It was also hypothesized that latent factors of *Saving Face* (i.e., honor) and *Ecological Constraints* would directly predict *Knife Tolerance*.

Method

Two hundred and twenty seven male participants of various backgrounds and socio-economic status aged 19-25 (*Mean age* = 21.26; *SD* = 10.05) took full part in a 10-minute structural equation study that was introduced to them as *'a survey on men, crime and violence'*. Like in all studies in this paper, they were mostly recruited from across the UK (using a snowballing technique on social media, like Facebook and Twitter). The survey comprised six 5-item Likert-type scales related to all the hypothesised factors. To minimise the order effect, the scales were presented in two random orders and constructed from the following concepts derived from the qualitative study described above (see Palasinski & Riggs, 2012): *Limited Trust in Authorities* (e.g., *When in physical danger, you can't rely on the police*; Cronbach's α= .84); *Limited Control over Status* (e.g., *It is very difficult to rise up the social ladder*; Cronbach's α = .73); *Physical Defence Ability* (e.g., *Knowing how to fight on the street is important*; Cronbach's α = .80); *Knife Tolerance* (e.g., *Knives are mostly used for deterrence purposes*; Cronbach's α = .65); *Need for Respect* (e.g., *The wish to command respect in others is only natural*; Cronbach's α =.76) and *Aggressive Masculinity* (e.g., *Shying away from aggression can be a weakness;* Cronbach's α =.61).

Results

The results from the structural equation model suggested an acceptable fit[2] (χ^2 = 17.10, df= 5, CFI = .95, RMSEA = .10; AIC 49.10). The resulting model (Figure 1) found low to high correlations (.20 to .89) between intercept and slope factors[3].

Insert Figure 1 here

Non-formed Fit Index = .94; Comparative Fit Index = .95; Root mean square error of approximation = .10; chi-square = 17.10; degrees of freedom = 5; e = error. As hypothesized, both latent factors, *Saving Face* (standardized coefficient = .20, $p < .05$) and *Ecological Constraints* (standardized coefficient = .24, $p < .05$) directly predicted *Knife Tolerance*. *Physical Defense Ability* did not have a statistically significant direct association to *Knife Tolerance* in this model (standardized coefficient = -.01, $p = .96$). However, an indirect effect (indirect effect standardized coefficient = .24) was discovered for the relation between *Physical Defense Ability* and *Knife Tolerance* via both latent factors: *Ecological Constraints* (standardized coefficient = .64, $p < .001$) and *Saving Face* (standardized coefficient = .35, $p < .01$).

Discussion

As hypothesised, and in line with the qualitative study (Palasinski & Riggs, 2012), *Need for Physical Defence, Need for Respect, Limited Trust in Authorities* and *Limited Control over Status* were found to be inter-correlated and predictive of *Aggressive Masculinity*, which was then predictive of *Knife Tolerance.* Thus, *Study 1* offers a relatively straightforward, but novel structural equation model supporting and describing the interrelation between key factors underpinning knife carrying tolerance. Whilst the concept of knife tolerance itself does not reveal the causes of knife-carrying, and the scale-based

[2] The ability indicator of model acceptability
[3] Parameters of the model suggesting that it is exploratory and should be treated with caution

measured factors may have limited ecological validity, these finding might potentially inform the design of relevant anti-knife messages. We elaborate on this in *Study 2*.

Study 2

Taking the proposed structural equation model and concepts from *Study 1* into account, *Study 2* draws on them to create related anti-knife carrying slogans with a view to identifying the most and least persuasive anti-knife messages. In other words, the purpose was to find the slogans that would be most and least capable of reducing knife-carrying tolerance. More specifically, the concepts of *Need for Respect* and *Saving Face* inform the textual contents of respect-related slogans. The *Need for Physical Defence* and *Aggressive Masculinity* concepts inform the textual contents of injury and death-related slogans. The concepts of *Limited Control over Status* and *Perceived Social Ecological Constraints* inform the textual contents of control-related slogans. The concept of *Limited Trust in Authorities* (that tend to attribute knife-carrying to deviance) informs the textual contents of pathology-related slogans. The concepts are important as they add validity to the created slogans. Drawing on protection motivation theory (Boss, et al., 2015; Floyd et al., 2000; Maddux & Rogers, 1983) and research suggesting that high threat advertising can be persuasive as long as it is not seen as overdramatic and fake (Eisenberg, 2003; Harman & Murphy, 2008), it was hypothesized that injury-themed slogans would be rated as most persuasive.

Method

Two hundred male participants of various backgrounds and socio-economic status aged 18-25 (*Mean age* = 20.40; *SD* = 11.11) took full part in an experimental study that was introduced to them as '*an exploration of anti-knife slogans*'. The 10-minute survey comprised five 5-item Likert-type scales, which were presented in two different orders: *Pathology* (emphasizing abnormality; e.g., *if you carry a knife, you risk becoming a deviant* - Cronbach's α =.78), *Respect* (emphasizing esteem; e.g., *if you carry a knife, you risk losing*

your own self-respect - Cronbach's α =.81), *Injury* (emphasizing physical trauma; e.g., *if you carry a knife, you risk being fed through a drip* - Cronbach's α =.83), *Death* (emphasizing fatality; e.g., *if you carry a knife, you risk losing your life* - Cronbach's α =.79) and *Control* (emphasizing the chaotic nature of confrontations involving knives (e.g., *if you carry a knife, you risk getting it out of hand* - Cronbach's α =.74).

Results

As the data were not distributed normally, the non-parametric equivalent to a one-way repeated measures design, Freidman's Test, was used. The results of the Friedman Test indicate that there was a statistically significant difference of the perceived effectiveness, across each slogan type; X^2 (4, N = 200) = 580.75, p < .005). The test found that the injury-related slogans were rated as most persuasive. However, it was pathology, not control-related, slogans that were reported as least persuasive. As the Friedman Test alone does not specify which slogans differed significantly from others, the analysis included the Wilcoxon Signed Rank Test (using a Bonferonni adjusted alpha value). This analysis found that *Pathology* slogans (*Mdn* = 3.80) were rated less persuasive than: *Respect* slogans (*Mdn* = 7.0, *Z* = -12.07, *p* < .005, *ES* = .85); *Injury* slogans (*Mdn* = 8.2, *Z* = -12.04, *p* < . 005, *ES* = .85); *Death* slogans (*Mdn* = 7.4, *Z* = -12.26, *p* < . 005, *ES* = .87) and *Control* slogans (*Mdn* = 6.8, *Z* = -12.23, *p* < .005, *ES* = .87).

In addition to this, *Respect* slogans (*Mdn* = 7.00) were rated less persuasive than: *Injury* slogans (*Mdn* = 8.20, Z = -10.57, *p* < .005, *ES* = .75), *Death* slogans (*Mdn* = 7.40, *Z* = -9.34, *p* < .005, *ES* = .66) and *Control* slogans (*Mdn* = 6.80, Z = -.65, *p* < .005, ES = .05). *Injury* related pairs (*Mdn* = 8.20) were rated more persuasive than: *Death* slogans (*Mdn* = 7.40, *Z* = -6.62, *p* < .005, *ES* = .47) and *Control* slogans (*Mdn* = 6.80, Z = -8.58, *p* < .005, ES = .63). Finally, *Death* related pairs (*Mdn* = 7.40), were rated more persuasive than *Control* scores (*Mdn* = 6.80, *Z* = -9.78, *p* < .005, *ES* = .69).

Discussion

As hypothesized, injury-themed slogans were rated as the most persuasive. This finding supports protection motivation theory (Boss, et al., 2015; Floyd et al., 2000; Maddux & Rogers, 1983) and research suggesting that high threat advertising can be persuasive as long as they are not 'over the top' (Eisenberg, 2003; Harman & Murphy, 2008). The issue, however, is that this finding is in contrast with the popular British anti-knife discourse that emphasizes the threats of prison or death (e.g., http://www.knifecrimes.org/). Thus, the practical value of one of the most popular slogans in use 'carry a knife and lose your life' should be challenged because the findings suggested here indicate it may be ineffective. The question of whether the injury-theme would be judged as most convincing in real-world anti-knife posters (most of which utilize the narrative of prison or loss of life) will be examined in *Study 3*.

Study 3

Having explored the relations between the concepts derived from the related qualitative research on teenage knife-carrying construal that informed the respective anti-knife slogans, the next stage involved the evaluation of popular anti-knife posters currently used in the United Kingdom. Two of the authors conducted a review of such posters to identify the predominant themes which exist within such posters (Cronbach's $\alpha = 0.7$). The eight predominant theme types identified were: death; fresh injury, healed injury, humour, masculinity, pathology, peace and prison.[4] Drawing on the results of *Study 2* and protection motivation theory (Boss, et al., 2015; Maddux & Rogers, 1983), it was hypothesized that the injury-themed posters would be rated as most persuasive, emotional and believable.

Method

One hundred and sixty nine men of various backgrounds and socio-economic status aged 18-25 (*Mean age* = 20.50; *SD* = 9.70) took full part in an experimental study that was

[4] Readers interested in the poster images used in this research can contact the corresponding author

introduced to them as '*an exploration of anti-knife injury posters'*. Participants were shown one real anti-knife poster that reflected each of the eight poster types. After seeing each poster, the participant was asked to complete a Likert-type scale survey, indicating the subjective persuasiveness, emotionality and believability of existing anti-knife posters used in the United Kingdom.

Results

Persuasiveness. As hypothesized, the most subjectively persuasive poster was *Fresh Injury* ($M = 7.50$; $SD = 2.27$), followed closely by *Healed Injury* ($M = 6.07$; $SD = 2.74$). The least effective poster was *Pathology* ($M = 2.09$; $SD = 1.93$), followed by *Humour* ($M = 3.45$; $SD = 2.64$), *Masculinity* ($M = 3.97$; SD = 2.73), *Prison* ($M = 5.99$; SD = 2.76), *Death* ($M = 4.62$; $SD = 2.66$) and *Peace* ($M = 4.69$; $SD = 2.65$). To compare the subjective persuasiveness of the posters pair by pair, a one-way repeated measures ANOVA was conducted. It showed a significant difference in the perceived persuasiveness of different types of poster (Wilks Lambda = 0.162, $F(8, 161) = 57.37$, $p < 0.001$, $\eta 2 = 0.838$). Subsequently, post hoc Bonferroni comparisons were run. Post hoc tests revealed that *Fresh Injury* was rated as more persuasive than *Healed Injury, Prison, Death, Pathology, Humour,* and *Masculinity* ($p < .001$). *Healed Injury* was rated as more persuasive than: *Death, Pathology, Humour, Masculinity,* and *Peace* ($p < .001$). *Prison* was rated as more persuasive than *Death, Pathology Masculinity, Peace* and *Pathology* ($p < .001$). *Death* was rated as more persuasive than *Humour* and *Pathology* ($p < .001$). Finally, *Humour* was rated as less persuasive than *Peace* ($p < .001$). The other pair-wise differences were not statistically significant.

Emotionality. The most emotional poster was *Fresh Injury* ($M = 6.13$, $SD = 2.68$). The least emotional were *Pathology* ($M = 1.74$, $SD = 1.57$) followed by *Humour* ($M = 2.59$, $SD = 1.96$), *Masculinity* ($M = 3.42$; $SD = 2.56$), *Peace* ($M = 4.43$; $SD = 2.55$), *Death* ($M =$

4.72; *SD* = 2.58), *Healed Injury* (*M* = 4.73; *SD* = 2.68) and *Prison* (*M*=5.32; *SD*=2.70). To compare the subjective emotionality of the posters pair by pair, a one way repeated measures ANOVA was conducted. It showed a significant difference; Wilks Lambda = .239, $F(8, 161) = 73.877$, $p < .001$, $\eta 2 = .761$. Subsequently, post hoc Bonferroni comparisons were run. Post hoc testing found that *Healed Injury* was rated as less emotional than *Fresh Injury*, and more emotional than *Pathology* and *Humour* ($p < .001$). *Fresh Injury* was more emotional than *Death, Pathology, Humour* and *Prison* ($p < .001$). *Prison* was rated as more emotional than *Pathology* and *Humour* ($p < .001$). *Death* was rated as more emotional that *Pathology* and less emotional than *Humour*. Pathology was rated as less emotional than *Humour* and *Prison* ($p < .001$) and *Humour* was rated as less emotional than *Masculinity* and *Peace* ($p < .001$). All other pair-wise differences were not statistically significant.

Believability. In terms of believability; the most believable poster was *Fresh Injury* (*M*= 7.43, *SD* = 2.53). The least believable one was *Pathology* (*M* = 1.98, *SD* = 1.82) followed by *Humour* (*M* = 3.28; *SD* = 2.27), *Masculinity* (*M* = 3.52; *SD* = 2.73), *Peace* (*M* = 4.50; *SD* = 2.65), *Death* (*M* = 4.95; *SD* = 2.49), *Healed Injury* (*M* = 6.73; *SD* = 2.53) and *Prison* (*M* = 6.89; *SD* = 2.82). To compare the subjective emotionality of the posters pair by pair, a one way repeated measures ANOVA was conducted. It showed a significant difference; Wilks Lambda = .157, $F(8, 161) = 123.916$, $p < .001$, $\eta 2 = .843$. Subsequently, post hoc Bonferroni comparisons were run. Post hoc testing showed that *Healed Injury* was less believable than *Fresh Injury* and *Prison*, while more believable than *Death, Pathology* and *Humour* ($p <.001$). *Fresh Injury* was more believable than *Death, Pathology, Humour* and *Prison* ($p <.001$). *Prison* was rated as more believable than *Death, Pathology*, and *Humour* ($p < .001$). *Death* was rated as less believable than *Prison*, but more believable than *Pathology*, *Masculinity* and *Humour* ($p < .001$). *Pathology* was rated as less believable than

Humour, Masculinity and *Prison* ($p < .001$). All other pair-wise differences were not statistically significant.

Discussion

As hypothesized, it was the *Fresh Injury* poster that was rated as most persuasive, emotional and believable, replicating the findings of *Study 2,* and reinforcing the utility of protection motivation theory (Boss, et al., 2015; Floyd et al., 2000; Maddux & Rogers, 1983), as well as research on strong but realistic fear appeals (Eisenberg, 2003; Harman & Murphy, 2008) and high-efficacy messages (Witte & Allen, 2000). Such consistency lends credence to the importance of graphic injury in anti-knife posters, questioning their currently popular emphasis on prison or loss of life. It must be acknowledged, however, that this study used only one type of injury sustained by a hand. Thus, in order to explore the specific role of injury type, a separate experiment was conducted.

Study 4

Given the results of *Study 3* suggesting that the theme of a graphic fresh injury was rated as most persuasive, emotional and believable in existing anti-knife posters, *Study 4* explored different types of knife injury across these three dimensions. Although most serious knife injuries are sustained to the neck and the torso, they are usually concealable under clothes. There are, however, some areas of the human body that are visible to the public on an almost permanent basis. The mouth, nose, ears and eyes are some of the key facial features helping us recognise individuals (Zhao, Chellappa, Phillips, & Rosenfeld, 2003) and their symmetry is critical in general sexual appeal (Etcoff, 2011; Fink, Neave, Manning, & Grammer, 2006), as well as widely accepted standards of attractive masculine looks (Scott, Pound, Stephen, Clark, & Penton-Voak, 2010).

In other words, although a small non-severe scar on the cheek has been found to enhance men's attractiveness for short-term relationships (Burriss, Rowland, & Little, 2009),

the physical compromise of these four features is probably undesirable even among men scoring high on hegemonic masculinity. Thus, most men would be unlikely to tolerate any genital disfiguration that may question their gender (Simpson & Adams, 2017). On this basis, and taking the issues of aesthetics and functionality into account, we hypothesized that the anti-knife poster featuring the eye, genital and nose injuries would be rated as more persuasive, emotional, and believable than those featuring injury to the mouth or the ear.

Method

One hundred and fifty one male participants of various backgrounds and socio-economic status aged 18-25 (*Mean age* = 21.30; *SD* = 10.08) took full part in an experimental study that was introduced to them as '*an exploration of anti-knife injury posters'*. The 10-minute study used advanced computer graphics to present (in two different orders) a captioned male avatar featuring graphic injuries to: the mouth, nose, ear and eye (Spencer-Oatey, 2007; Winston, Henson, Fine-Goulden, & Dolan, 2004). Considering ethical issues of sensitivity, the CGI poster suggesting the genital injury portrayed the lower part of an athletic man sporting speedos indicating his vaginal rather than penile features by a vertical line in the middle and the absence of any bulge. As most anti-knife posters used in the UK are captioned, the created posters were also combined with slogans corresponding to the presented injury. Similarly to *Study 3*, participants were asked to indicate the persuasiveness, emotionality and believability of the CGI posters using a Likert-type scale.

Results

Persuasiveness. The most persuasive CGI poster was *Eye Injury* (*M* = 4.96; *SD* = 2.60), followed by *Genital Injury* (*M* = 4.03; *SD* = 5.87), *Mouth Injury (M* = 3.91; *SD* = 2.28), *Nose Injury* (*M* = 3.80; *SD* = 2.35) and *Ear Injury* (*M* = 3. 72; *SD* = 2.23). To compare the subjective persuasiveness of the posters pair by pair, a one-way repeated measures ANOVA was conducted. It showed a significant difference; Wilks Lambda = .679, $F(4, 147) = 17.413$,

$p < .001$, $\eta 2 = .321$. Subsequently, post hoc Bonferroni comparisons were run - *Eye Injury* was rated as more persuasive than *Mouth Injury*; *Genital Injury*; *Ear Injury*: $p < .001$.

Emotionality. The most emotional CGI poster was *Eye Injury* (M=4.67; SD = 2.53), followed by *Mouth Injury* (M = 3.71; SD = 2.13), *Nose Injury* (M = 3.48; SD = 2.18), *Ear Injury* (M = 3.48; SD = 2.09) and *Genital Injury* (M = 3.40; SD = 2.42). To compare the subjective emotionality of the posters pair by pair, a one way repeated measures ANOVA was conducted. It showed a significant difference; Wilks Lambda = .691, $F(4, 147) = 16.433$, $p < .001$, $\eta 2 = .309$. Subsequently, post hoc Bonferroni comparisons were run. *Eye Injury* was rated as more emotional than *Mouth Injury, Genital Injury, Nose Injury* and *Ear Injury* ($p < .001$).

Believability. The most believable CGI poster was *Eye Injury* (M = 4.87; SD = 2.59), followed by *Ear Injury* (M = 3.83; SD = 2.41); *Mouth Injury* (M = 3.73; SD = 2.30), *Nose Injury* (M = 3.41; SD = 2.24) and *Genital Injury* (M = 3.07; SD = 2.08). To compare the subjective believability of the posters pair by pair, a one way repeated measures ANOVA was conducted. It showed a significant difference; Wilks Lambda = .655, $F(4, 147) = 19.374$, $p < .001$, $\eta 2 = .345$. Subsequently, post hoc Bonferroni comparisons were run. *Eye Injury* was rated as more believable that *Mouth Injury, Genital Injury, Nose Injury* and *Ear Injury* ($p < .001$). *Ear Injury* was also rated as more believable than *Genital Injury* ($p < .002$). *Nose Injury* was rated as more believable than *Ear Injury* ($p < .049$) and *Genital Injury* was rated as more believable than *Mouth Injury*: $p < .002$.

Discussion

As hypothesized, it was *Eye Injury* that was consistently rated as most persuasive, emotional, and believable. Beyond the functions of individual recognition (Zhao et al., 2003), sexual appeal (Etcoff, 2011; Fink et al., 2006; Scott, 2010), and relationship establishment and support (Burriss et al., 2009), the sense of sight is the most fundamental in humans and

its importance can perhaps only be matched by its physical vulnerability. Thus, the vividness and seriousness of *Eye Injury* appears to tie in with the value of protection motivation theory (Boss, et al., 2015; Floyd et al., 2000; Maddux & Rogers, 1983) and research on strong and realistic fear appeals (Eisenberg, 2003; Harman & Murphy, 2008; Witte & Allen, 2000). Whereas the genital organs might be valued higher than one eye socket, it must be acknowledged that the *Genital Injury* poster was qualitatively different from the other injury posters. In other words, the absence of any graphic flesh wound may have compromised its seriousness.

General Discussion

The goal of this series of studies was to provide empirical support to on-going methods to counter knife crime. Despite the prevalence of knife crime, there is a surprising lack of systematic research to guide effective counter-crime policies (Palasinski & Riggs, 2012), hampering the ability of policy makers to implement effective counter-measures (Ang, Huan, Chua, & Lim, 2011). In this research, and with a view to addressing this issue, we took a mixed method approach across four different empirical studies; each of which sought to provide new insight into the motivations behind knife-carrying, or the effectiveness of different aspects of anti-knife carrying messages.

In *Study 1*, we sought to identify the underlying motivations behind knife-carrying tolerance. Using structural equation modelling, we identified the role of *Aggressive Masculinity*, which, as we hypothesized, could lead to *Knife-carrying Tolerance*. Drawing on the results of *Study 1*, in *Study 2* we generated a series of anti-knife carrying slogans which *focussed on the Need for Physical Defence* (injury and death-related), *Control of Status* (control-related), and *Trust in Authorities* (pathology-related). As predicted, and in line with protection motivation theory (Boss, et al., 2015; Floyd et al., 2000; Maddux & Rogers, 1983), *Injury* slogans were rated to be the most effective. Specifically, and again in line with the

view that such images should not be 'over the top', *Injury* slogans (and not *Death*-related) were rated as the most persuasive. A similar pattern emerged in the results of *Study 3*, which examined real-world anti-knife posters, finding that *Fresh Injury* was rated as most persuasive, believable and emotional. Exploring the theme of injury further, in *Study 4*, we used advanced computer graphics and a male avatar with different forms of disfiguration, finding that the most persuasive, believable and emotional was the one featuring graphic eye injury. This finding is unsurprising given the importance of eyes within human psychology – in particular their cognitive, emotional, and social functions (see Brooks & Meltzoff, 2002).

Research Implications

This research supports protection motivation theory, showing its utility and offering clear future directions. One current area which is receiving significant attention is the recruitment of individuals to terrorist organizations. Here, several message campaigns have focused on the negative consequences of joining such groups (namely death). The US State Departments' campaign '*Think Again Turn Away'* frequently highlights the number of individuals killed by the terrorist organizations they joined. By contrast, however, the research reported in the present paper found that 'death' related messages were rated as less effective (arguably creating avoidance due to the high-emotional reaction). It may be suggested, then, that there is a disconnect between the scientific evidence and the heuristics or assumptions which lie at the core of several real-world counter-crime and public health campaigns. Such examples (and the overall lack of effectiveness associated with such messaging campaigns; e.g., see Katz, 2014) warrant an extension of this research.

At its core, this research advocates the importance of empirical research in developing public-health, or anti-crime campaigns that are to be delivered to the public *writ large.* As argued by Cismaru and Lavack (2010, p. 195), such campaigns require research to 'ensure that campaigns' benefit from research . . . [increasing] the chances that the campaign will

achieve its purpose' (Cismaru & Lavack, 2010, p. 195). The issue, however, is that there still remains a dearth of research on effective message type, and such research is often not conducted prior to the development and delivery of the message, but is, instead, conducted after the message is implemented as a 'measure of effectiveness'. Two cases reinforce this point. In the United Kingdom, there was recently a campaign aimed at increasing awareness of sexual assault through depicting well-known celebrities as victims (e.g., Kim Kardashian, Madonna, Miley Cyrus). However, research conducted on the effectiveness of messages that use 'well known' victims (e.g., Disney images) found that these were, overall, less effective than their real-world counterparts (Shortland & Palasinski, 2016). Furthermore, this paper advances from a methodological standpoint, a road map through which future research can continue to test the effectiveness of varying forms of deterrence before implementing them within the real world.

Policy Implications

The results offer a novel contribution to the development of effective anti-knife messages. For example, when looking at anti-sexual and domestic assault campaigns, several studies have found that those which involve highly emotive (and indeed stereotypical) depictions of the assault are often not the most effective (see Cho & Salmon, 2007). In addition to this, previous research, using similar methods as this research but focused on domestic abuse, found that realistic (but not the most severe) images of victims were rated as most effective (Shortland & Palasinski, 2016). Not only do less severe images often outperform the most severe types of images, but researchers have also reported that campaigns using the most severe image-types can create counter-productive outcomes.

For example, dramatic fear appeals about the health effects of smoking may actually increase intentions to smoke (Rogers & Mewborn, 1976), with similar results being seen in drinking (Kleinot & Rogers, 1982) and unsafe sex campaigns (Witte, 1992). This effect,

termed ‘backlash’ or ‘boomerang’ (see Witte, Meyer, & Martell, 2001), implies that people perceive sensitive media campaigns as frightening, causing them to deny the message or avoid the message (Cohen, 2013). Hence, while our results do not provide support for a ‘boomerang’ (as on this occasion we did not measure intentions, or behaviours, surrounding knife crime), they do support the wider literature (Witte & Allen, 2000), which has increasingly demonstrated that the effectiveness of fear-inducing deterrent-focussed campaigns is not backed up by scientific evidence. Instead, the results support the effectiveness of more weighted and restrained messages focused on the aetiology of the motivations behind that specific behaviour. This research further questions potential lay-assumptions in countering crime that are based on the ‘rational choice’ models of criminality (Natarajan, 2017) in which the benefits of a crime must ‘outweigh’ the costs. The models propose that by increasing the saliency of the costs, the balance should shift towards *not* committing a crime. Questioning such lay assumptions, this paper stresses the need for policies to be grounded in empirical data.

Limitations

Although most (if not all) of our sample do not represent convicted knife-carriers, most young men at risk of knife-crime have not been arrested. However, those who have engaged in knife-crime may be more likely to have seen (or know of) someone who died as a result of knife crime; in this case messages focussing on death may be more effective because the individual identifies with these concepts (whereas most members of our sample may not). This does not invalidate the findings here, but instead warrants future research to specifically explore the more general question of perceptual differences between our sample and convicted offenders, and the specific question of what types of messages would most appealing to the offenders.

Another limitation of this research lies in the link between subjective perceptions of believability, emotionality and persuasiveness and real-world behavioural change. To fully operationalize this work, further research is needed to measure the real world behavioural reactions to exposure to such messages. For example, further studies will need to incorporate methods (such as those used by Cho & Salmon, 2007) in which direct measures are taken from those exposed to the campaign or incorporate eye tracking or fMRI analysis. They might also address some other limitations of this research by using a wider range of messages, participation of violent offenders (who were found to show a deficit in fear processing – Jusyte, Stein, & Schönenberg, 2017) or use of more advanced and realistic computer graphics or virtual reality. Along these lines, the structural equation model could be validated using experimental manipulations of the key hypothesised factors. For example, the perceived social ecological constraints and threats to status could be manipulated to test possible changes in aggressiveness in a virtual environment. Further studies might consider socioeconomic, ethnic and cultural factors, as well as personality and individual differences. More specifically, they might explore what anti-knife messages are most persuasive to different age groups and how to tailor them to the highest risk targets (e.g., low-impulse control, low-emotional control youths, and those living in deprived areas). Such individuals, along with other high-risk groups, like convicted violent offenders or recidivists, might also get involved in the design of messages covering knives and other weapons.

The question of the extent to which our conclusions could be relevant beyond Britain, or how they could be used in helping to reduce gun crime or rape must also be pursued in further studies that might borrow from and advance our methodology. Daly and Wilson (1988) suggest that saving face and violence escalation are cross-cultural universals. However, there have been very few large-scale cross-cultural psychology studies of male violence to generalise. Such studies might also examine a variety of potential moderating

and mediating processes, as well as other contributory factors that all need to be carefully unpacked. For example, social ecological constraints surely differ by culture, potentially altering the opportunity costs of male violence in different environments. Also, there has been little consideration of the predictors and moderators of female violence, meaning that the results would be unlikely to generalise across genders.

Conclusion

This series of studies provides an important addition to the literature in that, through an inductive process of studying the motivations behind knife crime, the likely antecedents of successful knife messages were identified. Specifically, the results support the effectiveness of these types of messages above and beyond those that highlight the potential outcomes of death and prison. The messages which participants reported as being the most effective follow the predictions of protection motivation theory (Boss, et al., 2015; Floyd et al., 2000; Maddux & Rogers, 1983), in that they were not the most 'extreme' or 'graphic' depictions, but rather those that were less vivid but directly targeted the psychological antecedents of human perception (e.g., the importance of the face). Our research also builds upon, and adds to the literature on boomerang and backlash effects in messaging efforts by advocating the importance of less extreme visualizations in messaging campaigns that can create motivations for avoidance or denial. Looking at a series of on-going campaigns aimed at deterring a diverse series of crimes (sexual assault, domestic abuse, violent extremism), it is clear that many of these campaigns do not follow the lessons learnt through research efforts in this field. Given this, we strongly advocate the replication and expansion of these research efforts to ensure the effectiveness of future campaigns are maximized.

References

Ang, R. P., Huan, V. S., Chua, S. H., & Lim, S. H. (2012). Gang affiliation, aggression, and violent offending in a sample of youth offenders. *Psychology, Crime & Law*, *18*(8), 703-711.

Bentham, M. & Davenport, J. (2016). Knife crime in Britain soars by 15% in one year, new figures show. *Evening Standard*. Available at: http://www.standard.co.uk/news/crime/knife-crime-in-britain-soars-by-15-in-one-year-new-figures-show-a3091326.html. Retrieved on: 02 Sep 2017.

Boss, S. R., Galletta, D. F., Lowry, P. B., Moody, G. D., & Polak, P. (2015). What do users have to fear? Using fear appeals to engender threats and fear that motivate protective security behaviors. *MIS Quarterly, 39*(4), 837-864.

Brooks, R., & Meltzoff, A. N. (2002). The importance of eyes: how infants interpret adult looking behaviour. *Developmental Psychology, 38*(6), 958 – 966.

Burgess, E. S., & Wurtele, S. K. (1998). Enhancing parent-child communication about sexual abuse: a pilot study. *Child abuse & neglect*, *22*(11), 1167-1175.

Burriss, R. P., Rowland, H. M., & Little, A. C. (2009). Facial scarring enhances men's attractiveness for short-term relationships. *Personality and Individual Differences*, *46*(2), 213-217.

Castle, C. M., Skinner, T. C., & Hampson, S. E. (1999). Young women and suntanning: An evaluation of a health education leaflet. *Psychology & Health*, *14*(3), 517-527.

Cho, H., & Salmon, C. T. (2007). Unintended effects of health communication campaigns. *Journal of Communication, 57,* 293-317.

Cismaru, M., & Lavack, A. M. (2010). "Don't suffer in silence"—Applying the integrated model for social marketers to campaigns targeting victims of domestic violence. *Social Marketing Quarterly, 16*(1), 97-129.

Cohen, S. (2013). *States of denial: Knowing about atrocities and suffering*. John Wiley & Sons.

Daly, M. & Wilson, M. (1988). *Homicide*. New York: A. de Gruyter.

Eades, C., Grimshaw, R., Silvestri, A., & Solomon, A. (2007). *Knife crime. A review of evidence and policy.* London: Centre for crime and justice studies, King's College, London.

Eisenberg, D. (2003). Evaluating the effectiveness of policies related to drunk driving. *Journal of Policy Analysis and Management*, *22*(2), 249-274.

Etcoff, N. (2011). *Survival of the prettiest: The science of beauty*. Anchor.

Fink, B., Neave, N., Manning, J. T., & Grammer, K. (2006). Facial symmetry and judgements of attractiveness, health and personality. *Personality and Individual Differences*, *41*(3), 491-499.

Floyd, D. L., Prentice-Dunn, S., & Rogers, R. W. (2000). A meta-analysis of research on protection motivation theory. *Journal of applied social psychology*, *30*(2), 407-429.

Harman, B., & Murphy, M. (2008). The application of social marketing in reducing road traffic accidents among young male drivers: an investigation using physical fear threat appeals. *International Journal of Business and Management*, *3*(7), 129-139.

Hemenway, D., & Webster, D. W. (2015). Guest Editorial: Increasing knowledge for the prevention of firearm violence. *Preventive Medicine*, *79*, 3-4.

Johnston, C. (2016). Two south-east London teenagers killed in knife attacks in same week. *The Guardian*. Available at: https://www.theguardian.com/uk-news/2016/aug/06/two-south-east-london-teenagers-murdered-knives-three-days. Retrieved on: 02 Sep 2017.

Jusyte, A., Stein, T., & Schönenberg, M. (2017). Fear Processing Deficit in Violent Offenders: Intact Attentional Guidance but Impaired Explicit Categorization. *Psychology of Violence.* Available at: http://psycnet.apa.org/search/display?id=01a0ac01-b472-

e454-4ed0-97da1fe5843d&recordId=1&tab=PA&page=1&display=25&sort=PublicationYearMSSort%20desc%2CAuthorSort%20asc&sr=1. Retrieved on: 02 Sep 2017.

Katz, R. (2014). The State Department's Twitter War With ISIS Is Embarrassing. *Time Magazine.* September 16th 2014. Available at: http://time.com/3387065/isis-twitter-war-state-department/. Retrieved on: 02 Sep 2017.

Kleinot, M. C., & Rogers, R. W. (1982). Identifying effective components of alcohol misuse prevention programs. *Journal of Studies on Alcohol and Drugs, 43,* 802-811.

Lemos, G. (2004). *Fear and fashion. The use of knives and other weapons by young people*. London: Lemos & Crane.

Maddux, J. E., & Rogers, R. W. (1983). Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change. *Journal of experimental social psychology*, *19*(5), 469-479.

Mahler, H. I., Fitzpatrick, B., Parker, P., & Lapin, A. (1997). The relative effects of a health-based versus an appearance-based intervention designed to increase sunscreen use. *American Journal of Health Promotion*, *11*(6), 426-429.

Maxwell, R., Trotter, C., Verne J., Brown, P., & Gunnell, D. (2007). Trends in admissions to hospital involving an assault using a knife or other sharp instrument, England, 1997–2005. *Journal of Public Health, 29*(2), 186-190.

Natarajan, M. (2017). *Crime Opportunity Theories: Routine Activity, Rational Choice and Variants.* London, UK: Routledge.

Office for National Statistics (2016). *Offences involving the use of weapons*. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/compendium/focusonviolentcrimeandsexualoffences/yearendingmarch2015/chapter3offencesinv

olvingtheuseofweapons#hospital-admissions-for-assault-with-knives-or-sharp-instruments. Retrieved on: 02 Sep 2017.

Palasinski M. & Riggs D. W. (2012). Young White British Men and Knife-Carrying in Public: Discourses of Masculinity, Protection and Vulnerability. *Critical Criminology*, 20, 463-476.

Palasinski, M. (2013). Security, respect and culture in British teenagers' discourses of knife-carrying. *Safer Communities, 12,* 71-78.

Pechmann, C., Zhao, G., Goldberg, M. E., & Reibling, E. T. (2003). What to convey in antismoking advertisements for adolescents: The use of protection motivation theory to identify effective message themes. *Journal of Marketing*, *67*(2), 1-18.

Proto, L. (2016). *Knife crime in Britain soars by 15% in one year, new figures show*. Available at: http://www.standard.co.uk/news/crime/the-15-teenage-victims-of-knife-crime-in-2015-a3143901.html. Retrieved on: 02 Sep 2017.

Rogers, R. W., & Mewborn, C. R. (1976). Fear appeals and attitude change: Effects of a threat's noxiousness, probability of occurrence, and the efficacy of coping responses. *Journal of Personality and Social Psychology, 34,* 54-61.

Scott, I. M., Pound, N., Stephen, I. D., Clark, A. P., & Penton-Voak, I. S. (2010). Does masculinity matter? The contribution of masculine face shape to male attractiveness in humans. *PLoS one*, *5*(10), e13585.

Simpson, P., & Adams, J. (2017). A Structured Review and Critical Analysis of Male Perceptions of the Penis: a Comparison between Heterosexual Men and Men Who Have Sex with Men (MSM). *Men and Masculinities.* Available at: http://journals.sagepub.com/doi/abs/10.1177/1097184X17715054. Retrieved on: 02 Sep 2017.

Shortland, N. D., & Palasinski, M. (2016). Mirror, Mirror on the Wall, Which Is the Most Convincing of Them All? Exploring Anti-Domestic Violence Posters. *Journal of Interpersonal Violence.* Available on: http://journals.sagepub.com/doi/abs/10.1177/0886260516654931. Retrieved on: 02 Sep 2017.

Sloan, A., & Allison, E. (2015). Sharp rise in the proportion of young black and ethnic minority prisoners. *The Guardian.* Available at: https://www.theguardian.com/society/2015/jun/24/rise-proportion-black-ethnic-minority-young-prisoners-stop-and-search. Retrieved on: 02 Sep 2017.

Spencer-Oatey, H. (2007). Theories of identity and the analysis of face. *Journal of pragmatics*, *39*(4), 639-656.

Topping, A. (2015). Police cuts blamed for 23% rise in youth gang offences in London. *The Guardian*. Available at: https://www.theguardian.com/uk-news/2015/oct/11/police-cuts-blamed-rise-in-youth-gang-offences-in-london. Retrieved on: 02 Sep 2017.

Travis, A. (2016). Homicides in England and Wales up 14%. *The Guardian*. Available at: https://www.theguardian.com/uk-news/2016/jan/21/england-wales-homicides-rise-knife-gun-crime. Retrieved on: 02 Sep 2017.

Travis, A. (2017). Crime is biggest in a decade, ONS figures show. *The Guardian.* Available at: https://www.theguardian.com/uk-news/2017/jul/20/official-figures-show-biggest-rise-crime-in-a-decade. Retrieved on: 02 Sep 2017.

Wilson, M, & Daly, M. (1985). Competitiveness, risk taking, and violence: The young male syndrome. *Ethology and Sociobiology, 6*, 59-73.

Winston, J. S., Henson, R. N. A., Fine-Goulden, M. R., & Dolan, R. J. (2004). fMRI-adaptation reveals dissociable neural representations of identity and expression in face perception. *Journal of neurophysiology*, *92*(3), 1830-1839.

Witte, K., & Allen, M. (2000). A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health education & behavior*, *27*(5), 591-615.

Witte, K., Meyer, G., & Martell, D. (2001). *Effective health risk messages: A step-by step guide.* Thousand Oaks, CA: Sage.

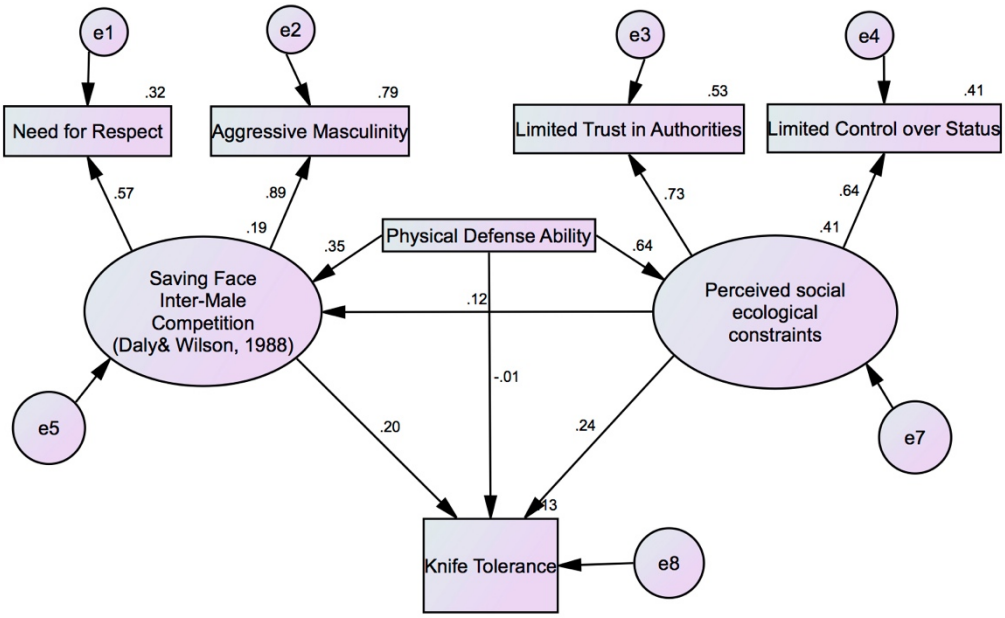
Younge, G. (2017). Beyond the blade: the truth about knife crime in Britain. *The Guardian.* Available at: https://www.theguardian.com/uk-news/2017/mar/28/beyond-the-blade-the-truth-about-knife-in-britain**.** Retrieved on: 02 Sep 2017.

Zhao, W., Chellappa, R., Phillips, P. J., & Rosenfeld, A. (2003). Face recognition: A literature survey. *ACM computing surveys (CSUR)*, *35*(4), 399-458.

Figures

Figure 1

Results for the Structural Equation Model



Appendix 1

Death-themed poster

Pathology-themed poster

Humour message-themed poster

Prison-themed poster

Peace-themed poster

(aggressive) Masculinity poster

Mild injury-themed poster

Severe injury-themed poster

Appendix 2

If you carry a knife, you may lose an ear

If you carry a knife, you may lose your nose

If you carry a knife, you may lose an eye

If you carry a knife, you may lose your manhood

If you carry a knife, you may lose your smile